ATTACHMENT 4: PROJECT DESCRIPTION

Objectives

Groundwater is the sole source of water for the residents of IWV. The current estimate of pumping is approximately 27,000 acre-feet per year. Various studies estimate groundwater recharge at 5,000 to 10,000 acre-feet per year. The basin is considered to be in a state of overdraft. Current land use ranges from rural, urban, industrial, military, and agricultural. Residents of the Indian Wells Valley Groundwater Basin (CA DWR Bulletin 118, Basin 6-54) are concerned about the affects of increased groundwater pumping attributed to land use conversion from vacant to agricultural and/or urban that will result in increased water consumption developing a baseline groundwater characterization of the groundwater basin will allow present and future water resource managers to:

- Properly utilize the groundwater while minimizing changes to groundwater quality and groundwater chemistry.
- Develop a Salt and Nutrient Management Plan for the basin,
- Comply with the State of California Irrigated Lands Management Program.
- Develop a geochemical fate and transport model to work conjunctively with the groundwater flow model developed for the major IWV groundwater stakeholders (Indian Wells Valley Water District (IWVWD), Naval Air Weapons Station, China Lake (NAWS) and Searles Minerals, Inc.) by Brown and Caldwell, Inc. (January, 2009).

In 1985, the Kern County Water Agency (Agency) was designated by the Kern County Board of Supervisors as the groundwater data repository for Kern County. Since the 2001/2002 LGA Grant, the Kern County Water Agency (Agency) has been receiving and archiving groundwater quality analyses from the Kern County Environmental Health Services Department (EHS) through the Kern County Water Well Ordinance program. The permitting process requires that after a well is completed, a water quality analysis for major anions, cations, metals, and bacteria be performed by a licensed laboratory before the permit is approved. Along with the analysis, EHS also submits a California Department of Water Resources Well Completion Report (WCR) and a copy of the finalized EHS permit. Upon receipt of the information, the Agency archives the water quality analysis information along with location data (State Plane Coordinates and Latitude/Longitude). Once in the database, this data can be accessed through the Agency's Geographical Information System (GIS) for mapping and analysis purposes. The Agency database currently contains approximately 400,000 geo-referenced water quality records ranging in date from 1915 to the present. In 2009, the Group requested the Agency to copy into a digital format all water well permit information in storage at EHS for IWV. This dataset includes water quality data and location data for approximately 400 wells which has not been archived to the Agency's database. In addition, historic data is available from NAWS, IWVWD and the United States Geological Survey that should be included in the database.

Tasks

1. Archival of all available groundwater quality data for IWV.
2. Review and analysis of all relevant groundwater quality in a spatial (GIS) and temporal (time series) format by a qualified geochemist.

3. Develop groundwater quality trends over time using anion/cation ratios, metals concentrations from existing data along observed and predicted flow paths based on the results from the 2005/2006 LGA Grant study.
4. Develop and implement a groundwater quality monitoring grid of no more than 200 production wells (private domestic, municipal, or agricultural) throughout the groundwater basin for analysis of general minerals and metals.
5. Sample and Lab Analysis of 200 well groundwater quality monitoring grid.
6. Use data from step 4 to designate a grid of select water production wells for a water quality monitoring program. The time interval for this monitoring program will be determined from this study. This monitoring program will be funded by the Kern County Water Agency.
7. Develop the baseline characterization of the present day groundwater quality of the basin.
8. Designate areas of contamination and/or potable vs. non-potable waters to be used in development of a Salt and Nutrient Management Plan.
9. Incorporate findings into implementation of the IWV Groundwater Management Plan (Attachment 3).
10. Quarterly project reports.
11. Final report.

Goals

1. Characterize by anion/cation ratios non-potable waters that have the greatest potential for future desalinization. This will incorporate background data and operational results from the IWVWD Neal Ranch Desalinization Project.
2. Incorporate results of this study in participation the State of California Irrigated Lands Management Program.
3. Interpretation of the data using but not limited to Earth Vision 3D visualization software and various geochemical isotope data, investigative processes, and conclusions will be reviewed and/or performed under the guidance of Dr. Randy Bassett, Tetra Tech, Inc.

The applicant will be collaborating with the major water stakeholders in the IWV groundwater basin in administering and implementing the grant package. The IWVWD and the stakeholders are signatories to a Memorandum of Understanding (MOA) (Attachment 3) that created the Indian Wells Valley Cooperative Groundwater Management Group (Group) in 1995. The Group is a public water data-sharing committee consisting of most of the major water producers, other government agencies, and concerned citizens in the Valley. The signatories of the MOA include:

- United States Dept. of Interior, Bureau of Land Management (BLM)
- City of Ridgecrest
- County of Kern
- Eastern Kern County Resource Conservation District
- Searles Valley Minerals, Inc.
- Indian Wells Valley Airport District
- Inyokern Community Services District
- Kern County Water Agency
- United States Navy, Naval Air Weapons Station, China Lake

- Quist Farms

In the past, efforts by the individuals or agencies involved were often, for lack of communication, duplicated by another. This group was formed to coordinate efforts, share data, and avoid the redundancy of effort.

A technical subcommittee of the Group continually reviews and monitors the ongoing efforts to better understand the local water resources. The technical subcommittee is also responsible for an extensive well monitoring program and ongoing groundwater investigations.

The Group meetings are public and are held on the third Thursday of each Month at 1:00 p.m., in the IWVWD Board Room. Progress and status of the LGA Grant will be presented at these monthly meetings, regularly scheduled workshops, and on the Group website: www.iwvgroundwater.org.